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Yeast Cell Surface Display of Proteins  
and Uses Thereof

Inventor: Wittrup, et al. Filed: 12/16/03  
USSN Not assigned Atty Docket 97-99E

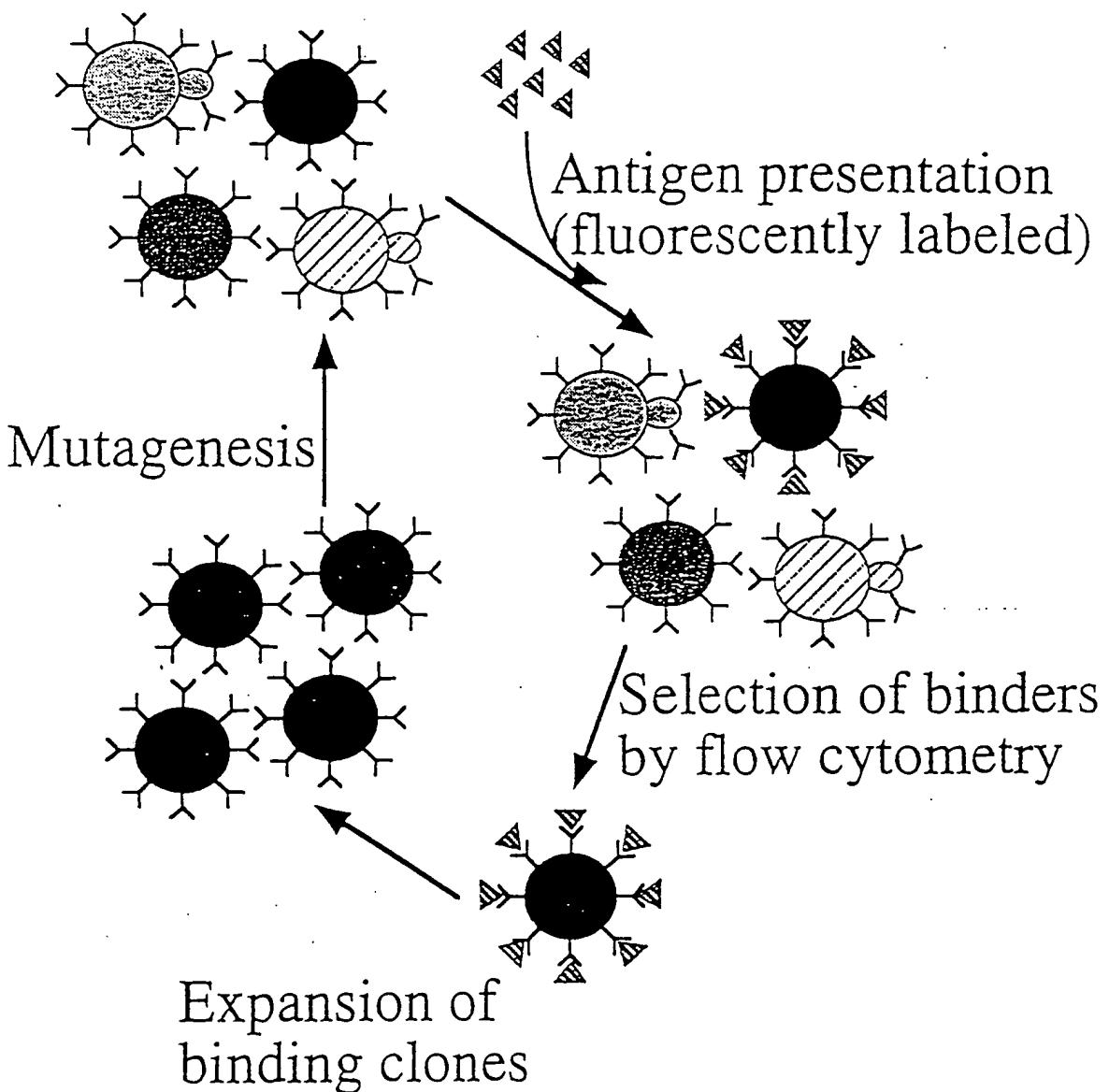


FIG. 1

Yeast Cell Surface Display of Proteins  
and Uses Thereof

Inventor: Wittrup, et al. Filed: 12/16/03  
USSN Not assigned Atty Docket 97-99E

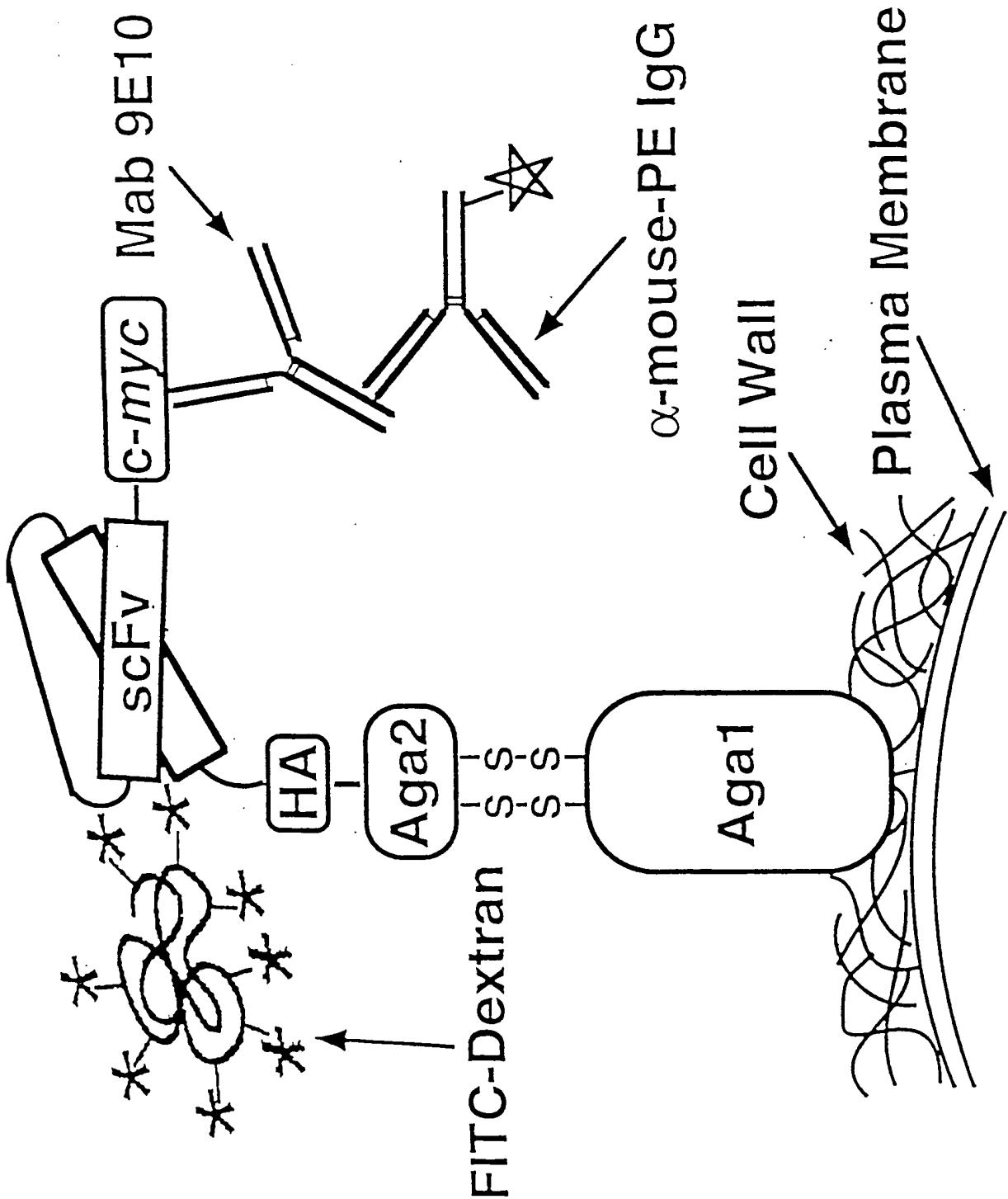


FIG. 2

Yeast Cell Surface Display of Proteins  
and Uses Thereof

Inventor: Wittrup, et al. Filed: 12/16/03  
USSN Not assigned Atty Docket 97-99E

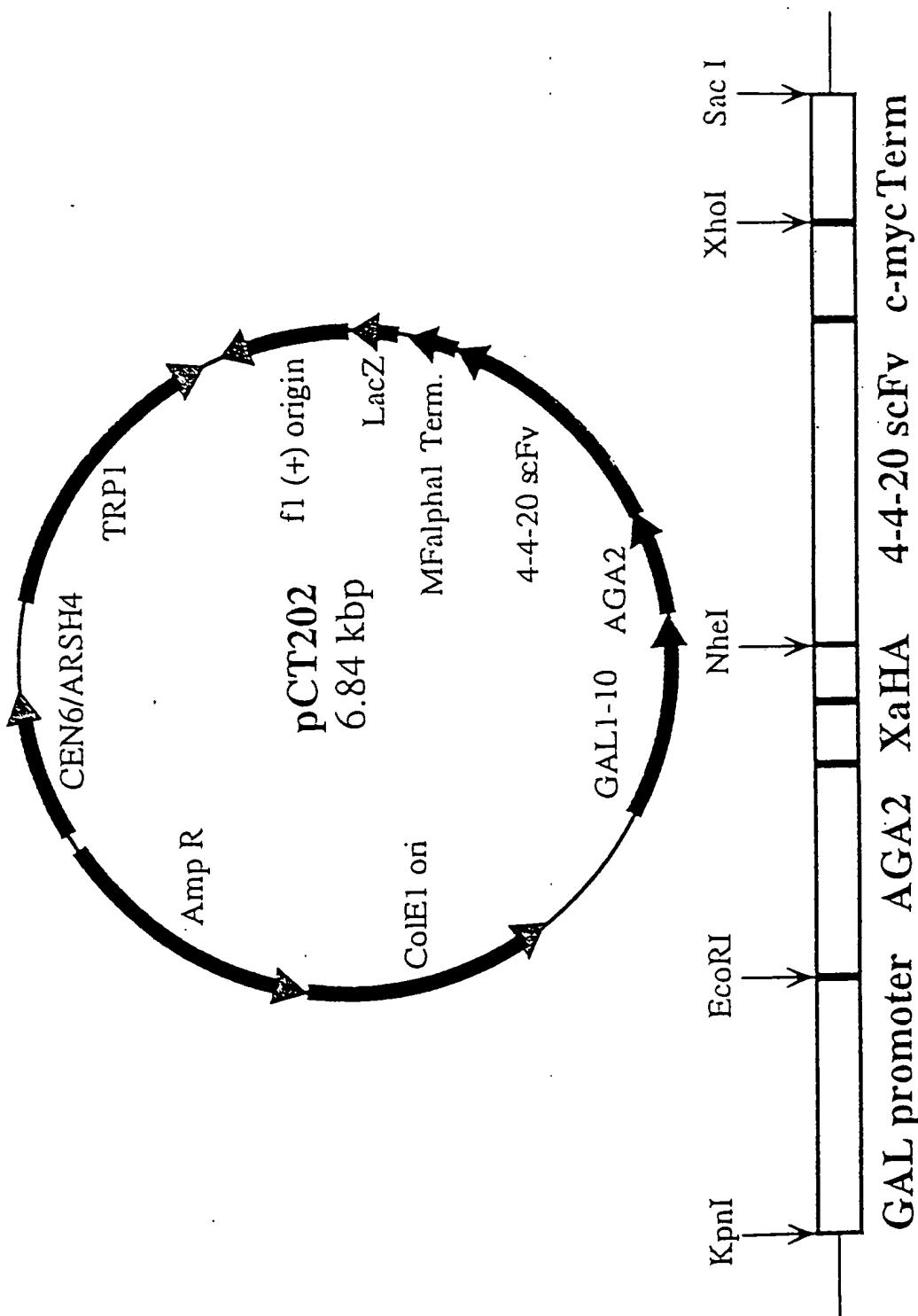


FIG. 3

Yeast Cell Surface Display of Proteins  
and Uses Thereof

Inventor: Wittrup, et al. Filed: 12/16/03  
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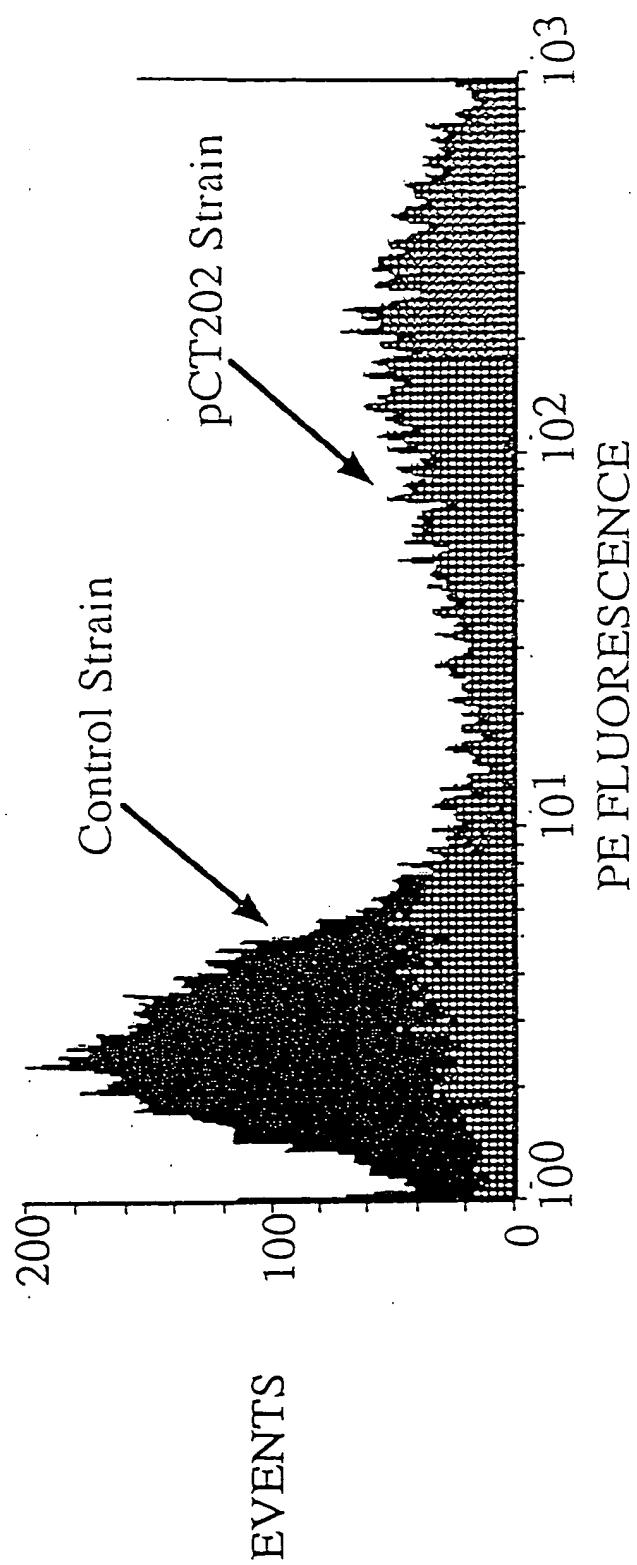


FIG. 4

Yeast Cell Surface Display of Proteins  
and Uses Thereof

Inventor: Wittrup, et al. Filed: 12/16/03  
USSN Not assigned Atty Docket 97-99E

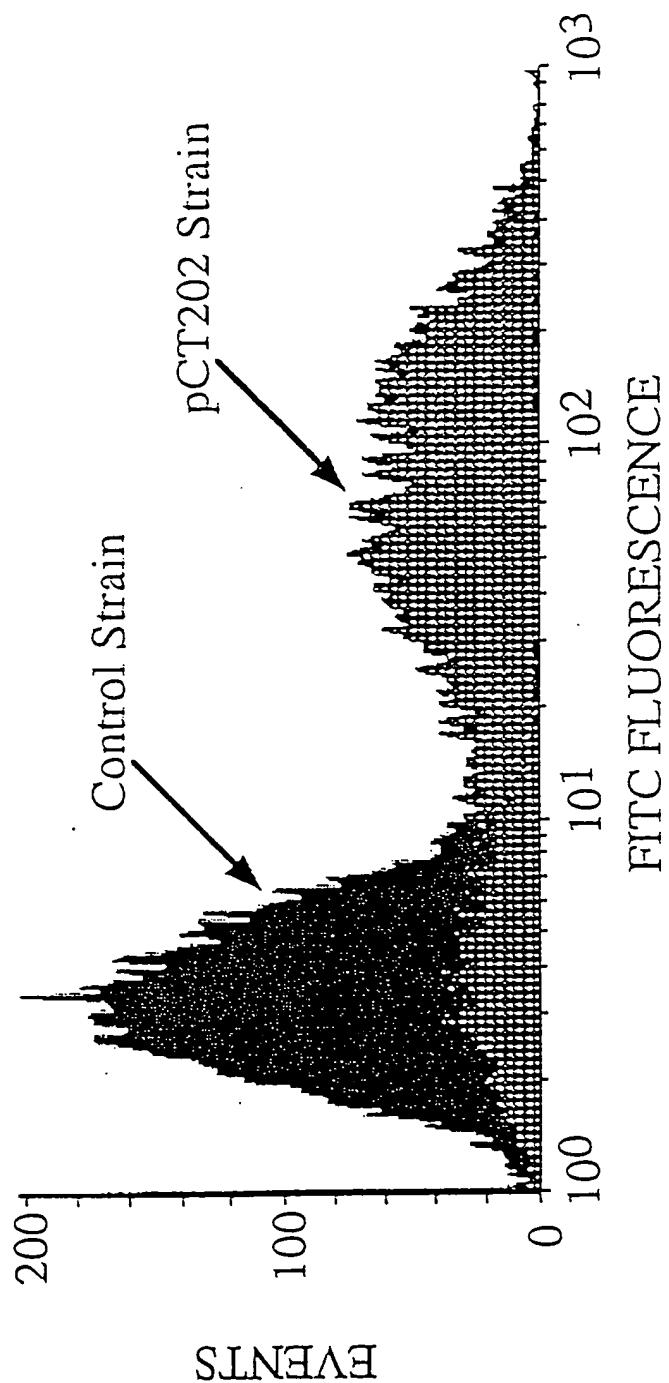


FIG. 5

Yeast Cell Surface Display of Proteins  
and Uses Thereof

Inventor: Wittrup, et al. Filed: 12/16/03  
USSN Not assigned Atty Docket 97-99E

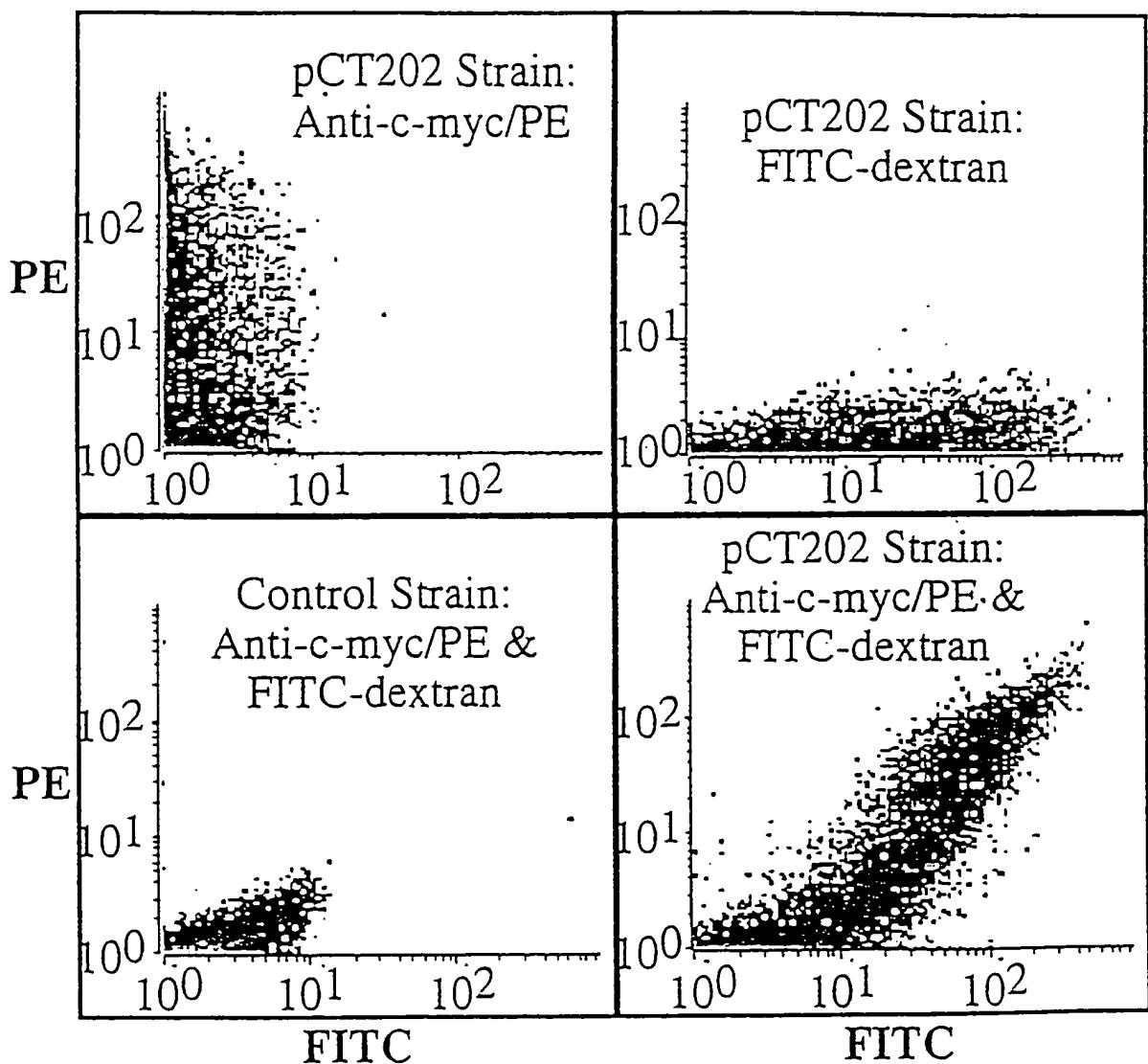


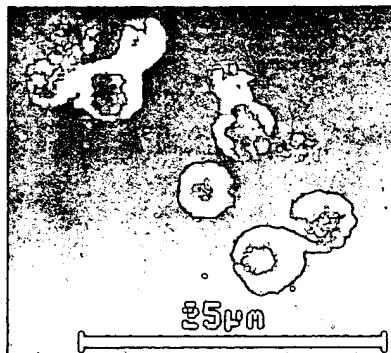
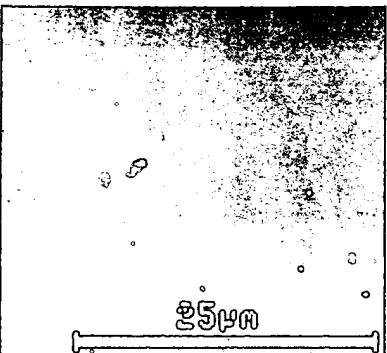
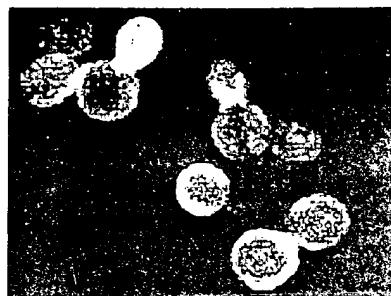
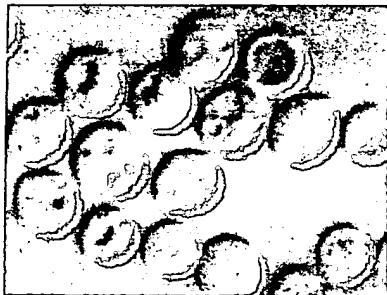
FIG. 6

Yeast Cell Surface Display of Proteins  
and Uses Thereof

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USSN Not assigned Atty Docket 97-99E

1 ATTAGAATTC CCTACTTCAT ACATTTCAA TTAAGATGCA GTTACTTCGC  
51 TGTTTTCAA TATTTCTGT TATTGCTTCA GTTTAGCAC AGGAACGTGAC  
101 AACTATATGC GAGCAAATCC CCTCACCAAC TTTAGAATCG ACGCCGTACT  
151 CTTTGTCAAC GACTACTATT TTGGCCAACG GGAAGGCAAT GCAAGGAGTT  
201 TTTGAATATT ACAAAATCAGT AACGTTGTC AGTAATTGCG GTTCTCACCC  
251 CTCAACAACT AGCAAAGGCA GCCCCATAAA CACACAGTAT GTTTTTAAGG  
301 ACAATAGCTC GACGATTGAA GGTACATACC CATAACGACGT TCCAGACTAC  
351 GCTCTGCAGG CTAGCGACGT CGTTATGACT CAAACACCAC TATCACTTCC  
401 TGTTAGTCTA GGAGATCAAG CCTCCATCTC TTGCAGATCT AGTCAGAGCC  
451 TTGTACACAG TAATGGAAAC ACCTATTTAC GTTGGTACCT GCAGAACCCA  
501 GGCCAGTCTC CAAAGGTCTT GATCTACAAA GTTTCCAACC GATTTCTGG  
551 GGTCCCAGAC AGGTTCAGTC GCAGTGGATC AGGGACAGAT TTCACACTCA  
601 AGATCAGCAG AGTGGAGGCT GAGGATCTGG GAGTTTATTT CTGCTCTCAA  
651 AGTACACATG TTCCGTGGAC GTTCGGTGGGA GGCACCAAGC TTGAAATTAA  
701 GTCCTCTGCT GATGATGCTA AGAAGGATGC TGCTAAGAAG GATGATGCTA  
751 AGAAAGATGA TGCTAAGAAA CATGGTGACG TCCTAACTGGA TGAGACTGG  
801 GGAGGCTTGG TGCAACCTGG GAGGCCATG AAACCTCTCCT GTGTTGCCCTC  
851 TGGATTCACT TTTAGTGAATC ACTGGATGAA CTGGGTCCGC CAGTCTCCAG  
901 AGAAAGGACT GGAGTGGGTAA GCACAAATTA GAAACAAACC TTATAATTAT  
951 GAAACATATT ATTCAAGATTC TGTGAAAGGC AGATTCAACCA TGTCAAGAGA  
1001 TGATTCCAAA AGTAGTGTCT ACCTGCAAAT GAACAACTTA AGAGTTGAAG  
1051 ACATGGGTAT CTATTACTGT ACGGGTTCTT ACTATGGTAT GGACTACTGG  
1101 GGTCAAGGAA CCTCAGTCAC CGTCTCCTCA GAACAAAAGC TTATTTCTGA  
1151 AGAAGACTTG TAATAGCTCG AG

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**FIG. 8A**

**FIG. 8B**

Yeast Cell Surface Display of Proteins  
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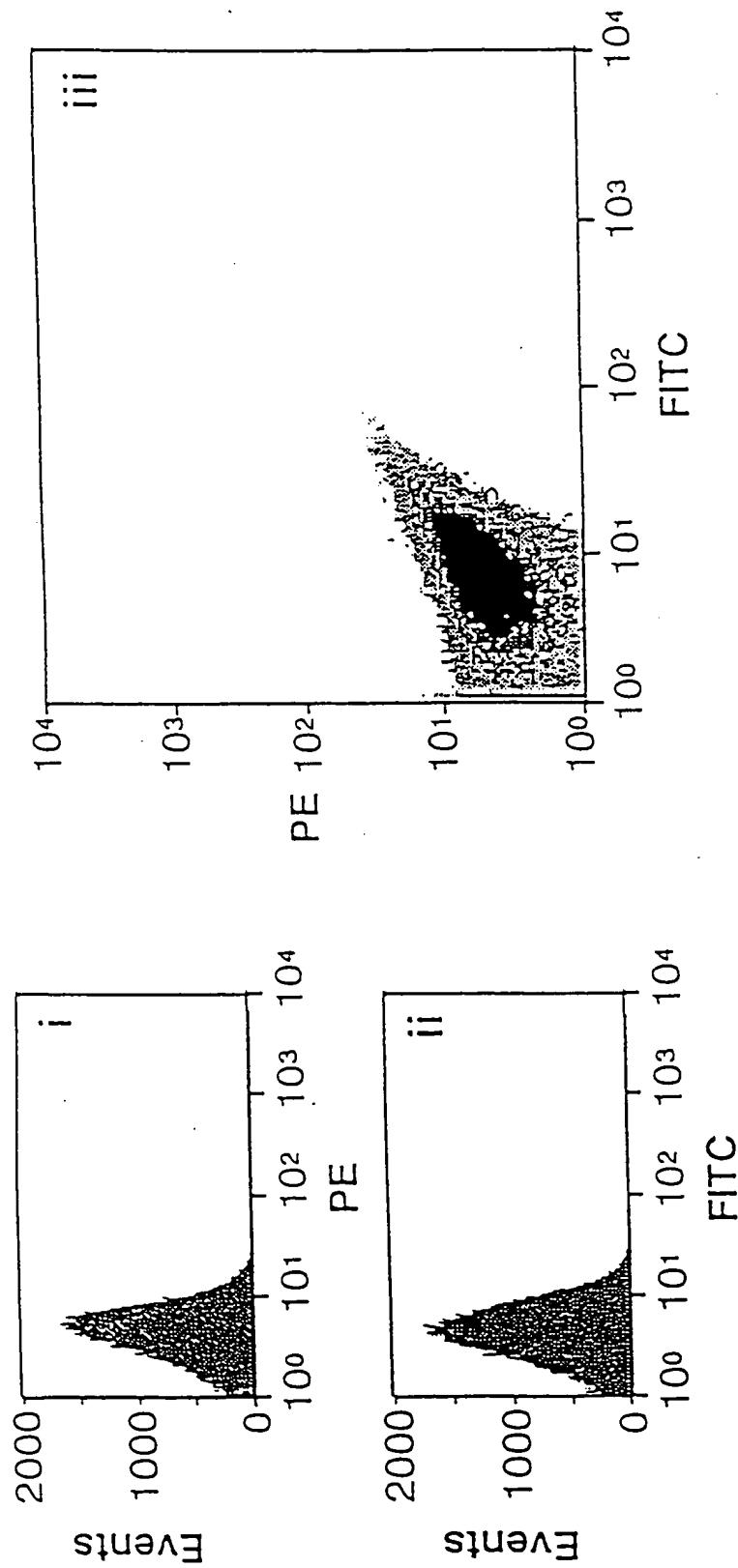


FIG. 9A

Yeast Cell Surface Display of Proteins  
and Uses Thereof

Inventor: Wittrup, et al. Filed: 12/16/03  
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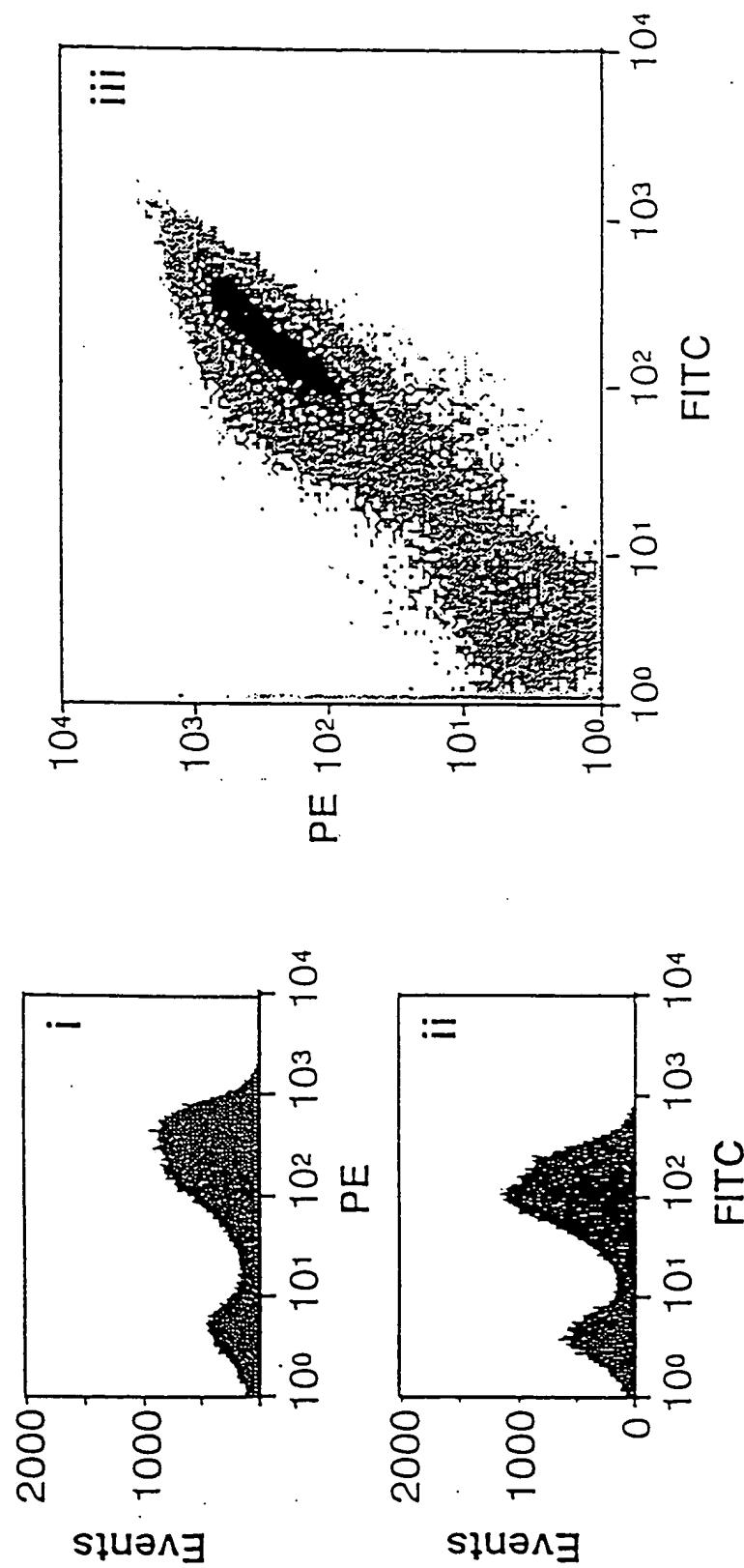


FIG. 9B

Yeast Cell Surface Display of Proteins  
and Uses Thereof

Inventor: Wittrup, et al. Filed: 12/16/03  
USSN Not assigned Atty Docket 97-99E

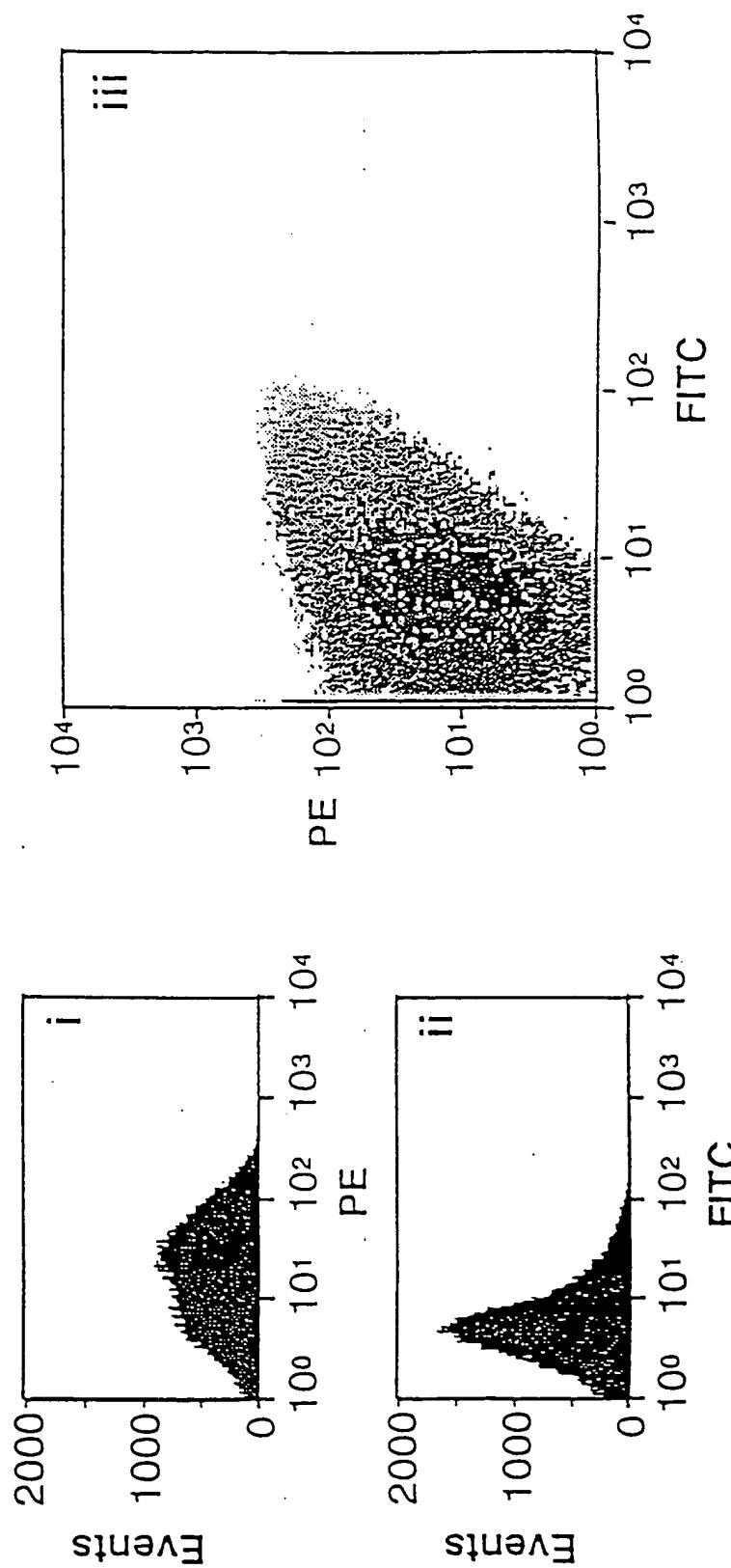


FIG. 9C

Yeast Cell Surface Display of Proteins  
and Uses Thereof

Inventor: Wittrup, et al. Filed: 12/16/03  
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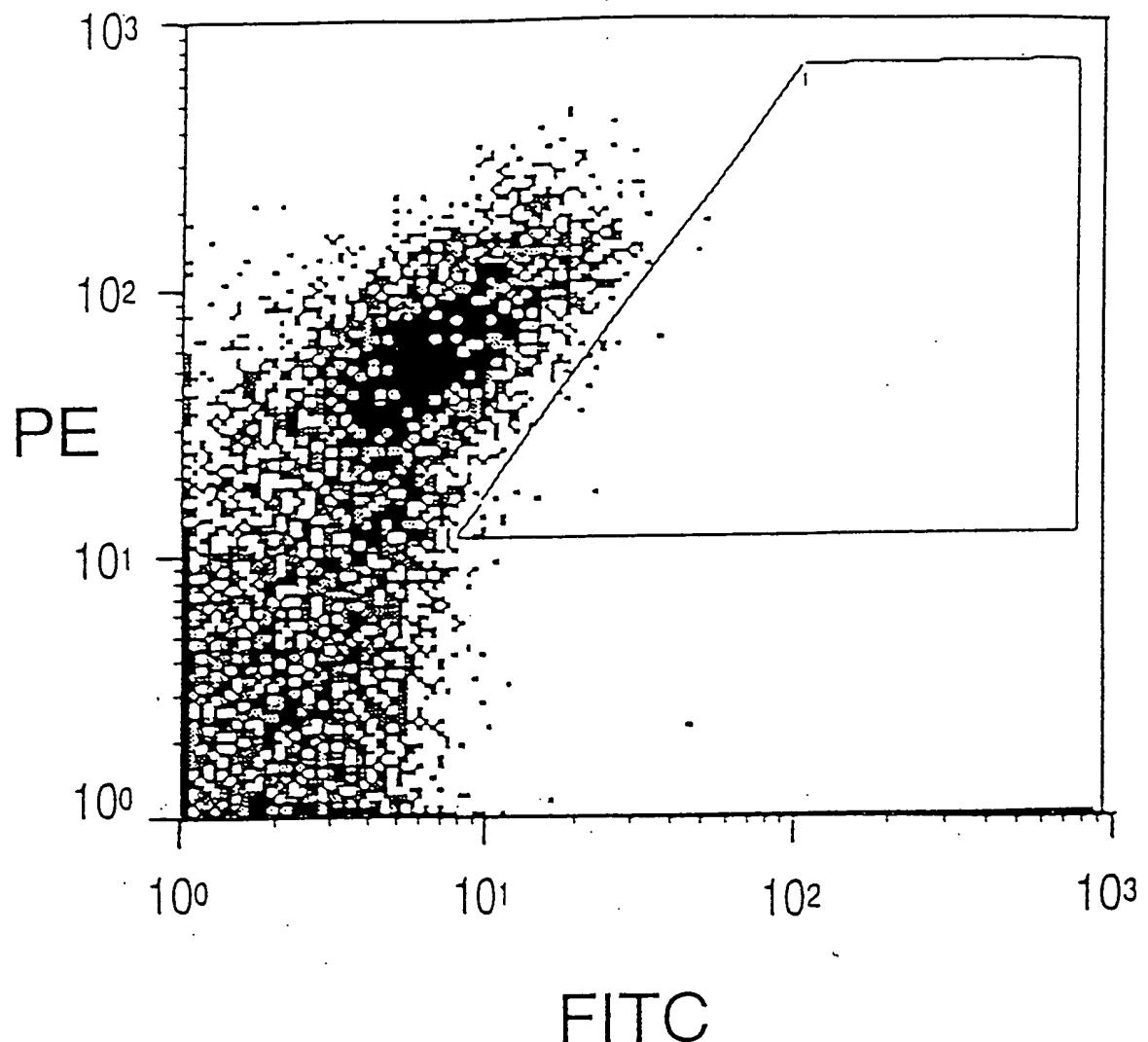


FIG. 10A

Yeast Cell Surface Display of Proteins  
and Uses Thereof

Inventor: Wittrup, et al. Filed: 12/16/03  
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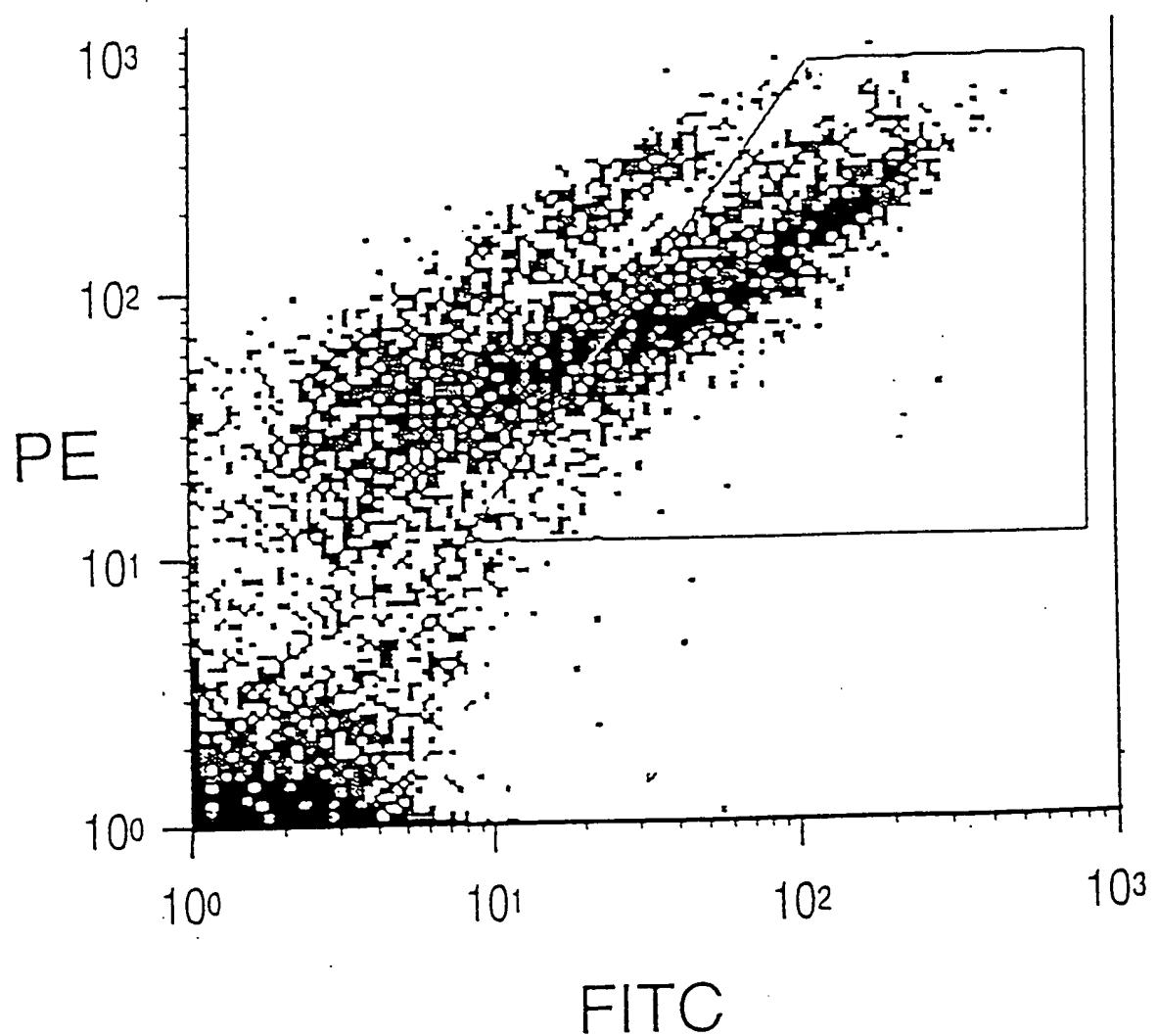


FIG. 10B

Yeast Cell Surface Display of Proteins  
and Uses Thereof

Inventor: Wittrup, et al. Filed: 12/16/03  
USSN Not assigned Atty Docket 97-99E

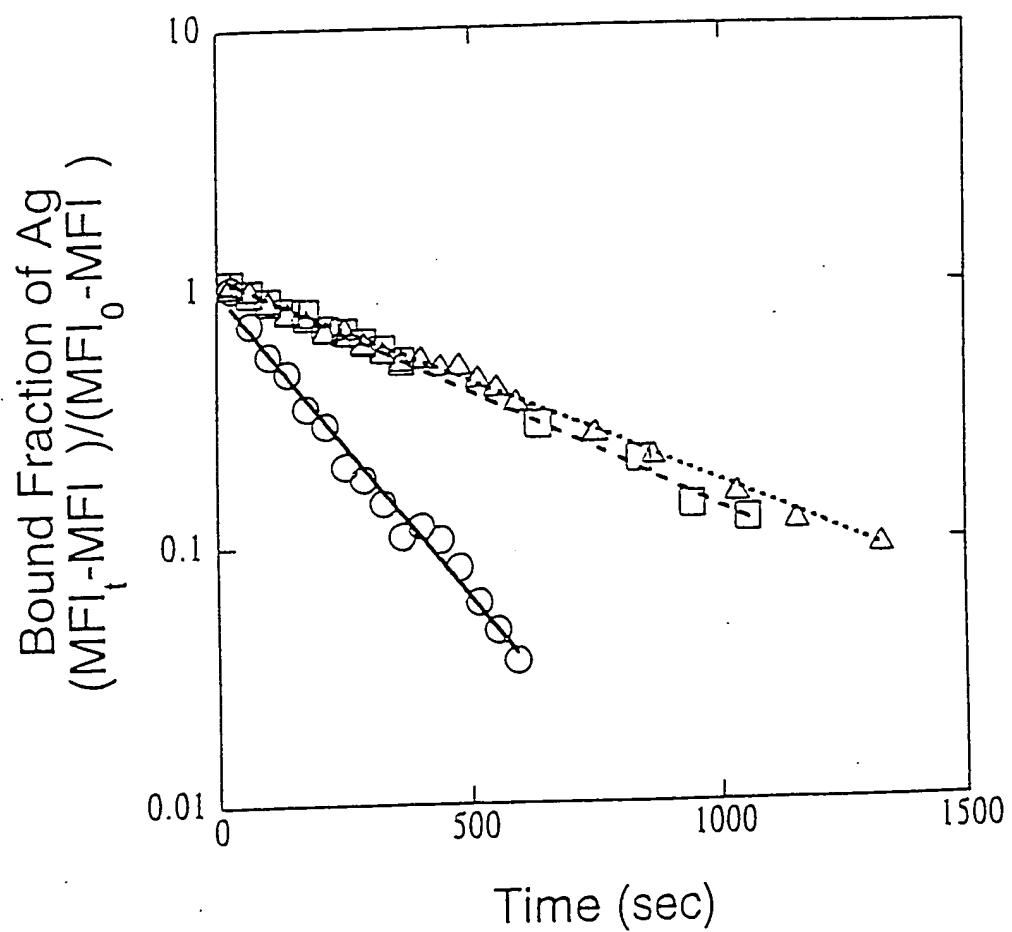


FIG. 11

Yeast Cell Surface Display of Proteins  
and Uses Thereof

Inventor: Wittrup, et al. Filed: 12/16/03  
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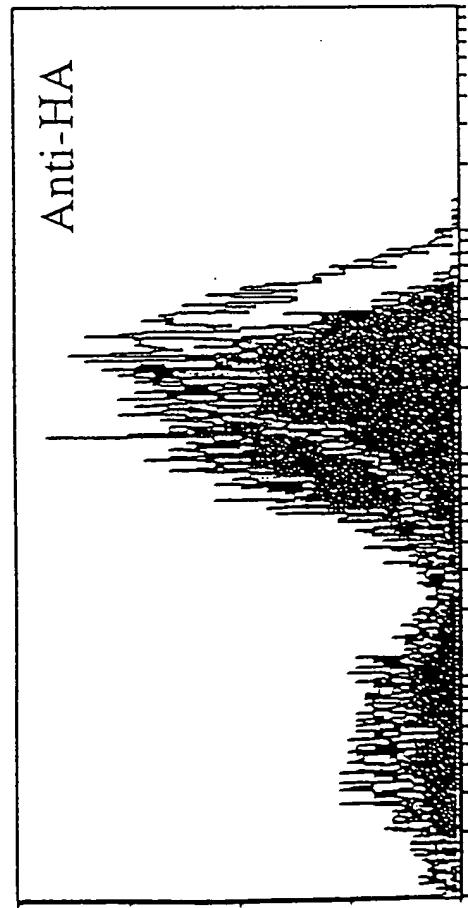


FIG. 12A

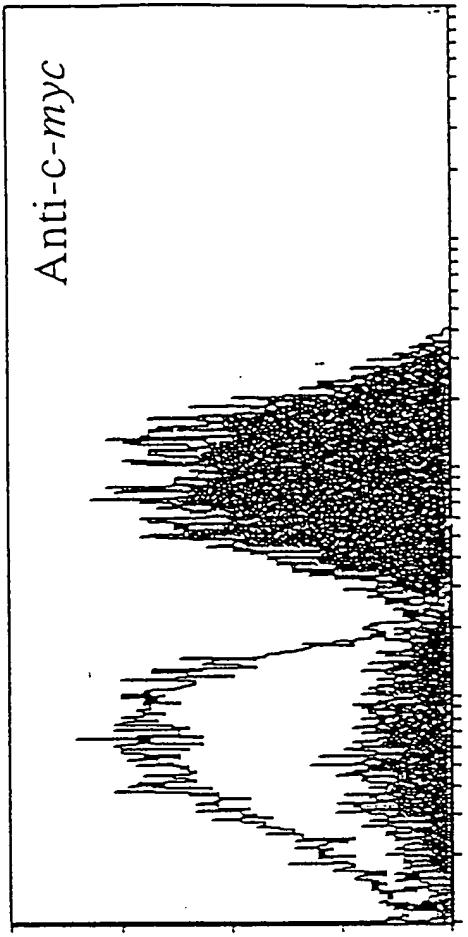


FIG. 12B

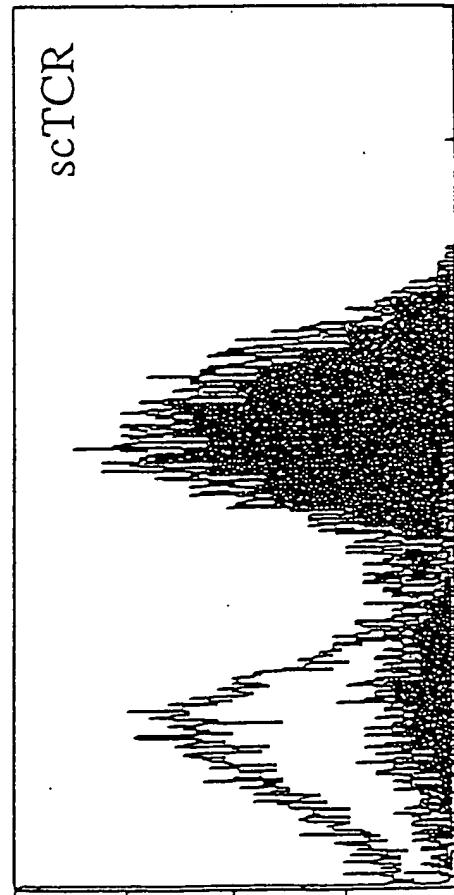


FIG. 12C

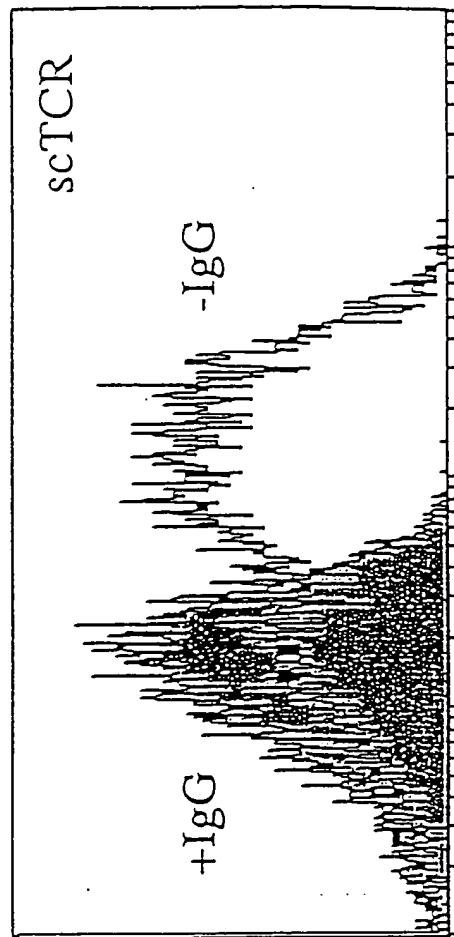


FIG. 12D

Yeast Cell Surface Display of Proteins  
and Uses Thereof

Inventor: Wittrup, et al. Filed: 12/16/03  
USSN Not assigned Atty Docket 97-99E

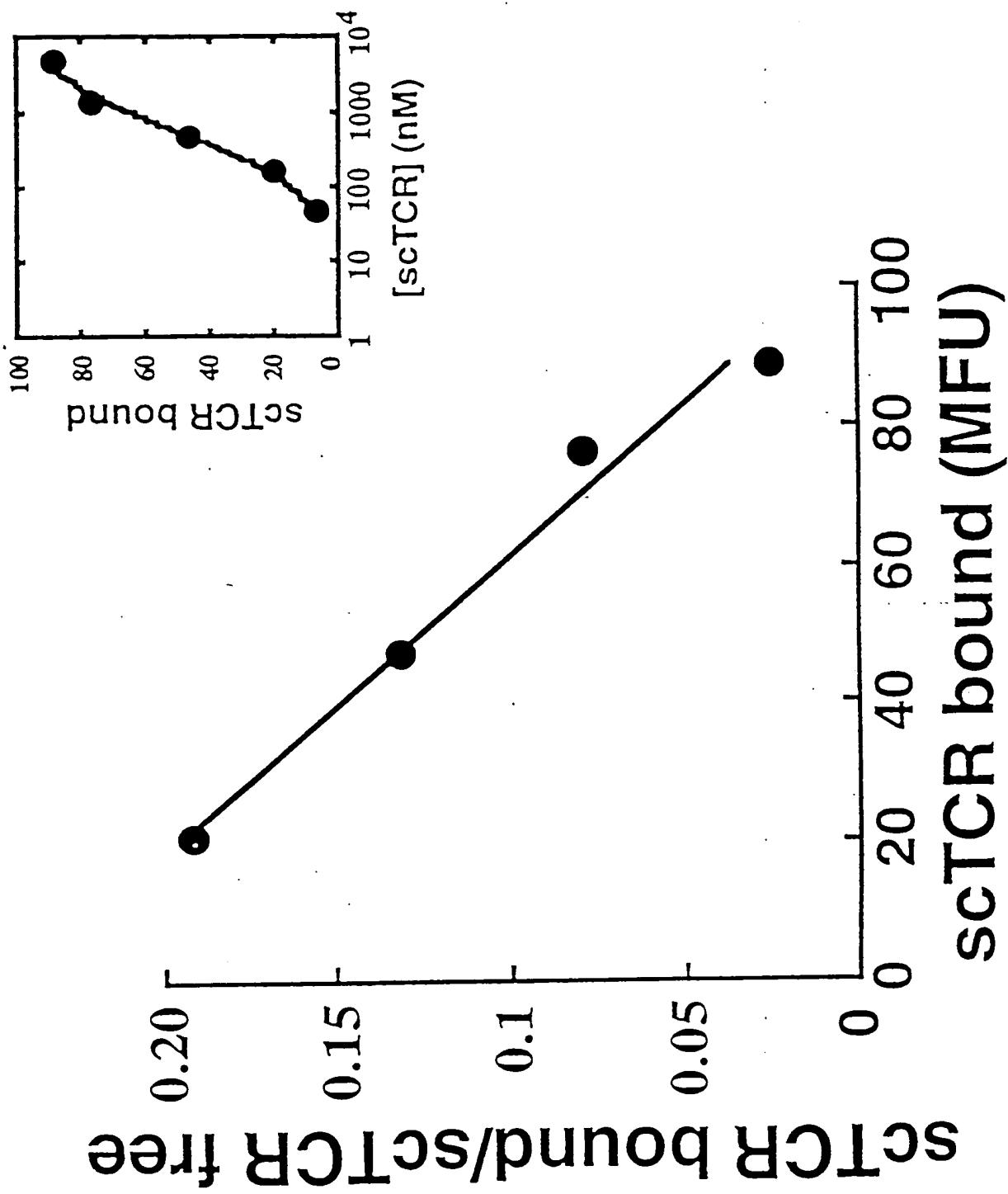


FIG. 13

Yeast Cell Surface Display of Proteins  
and Uses Thereof

Inventor: Wittrup, et al. Filed: 12/16/03  
USSN Not assigned Atty Docket 97-99E

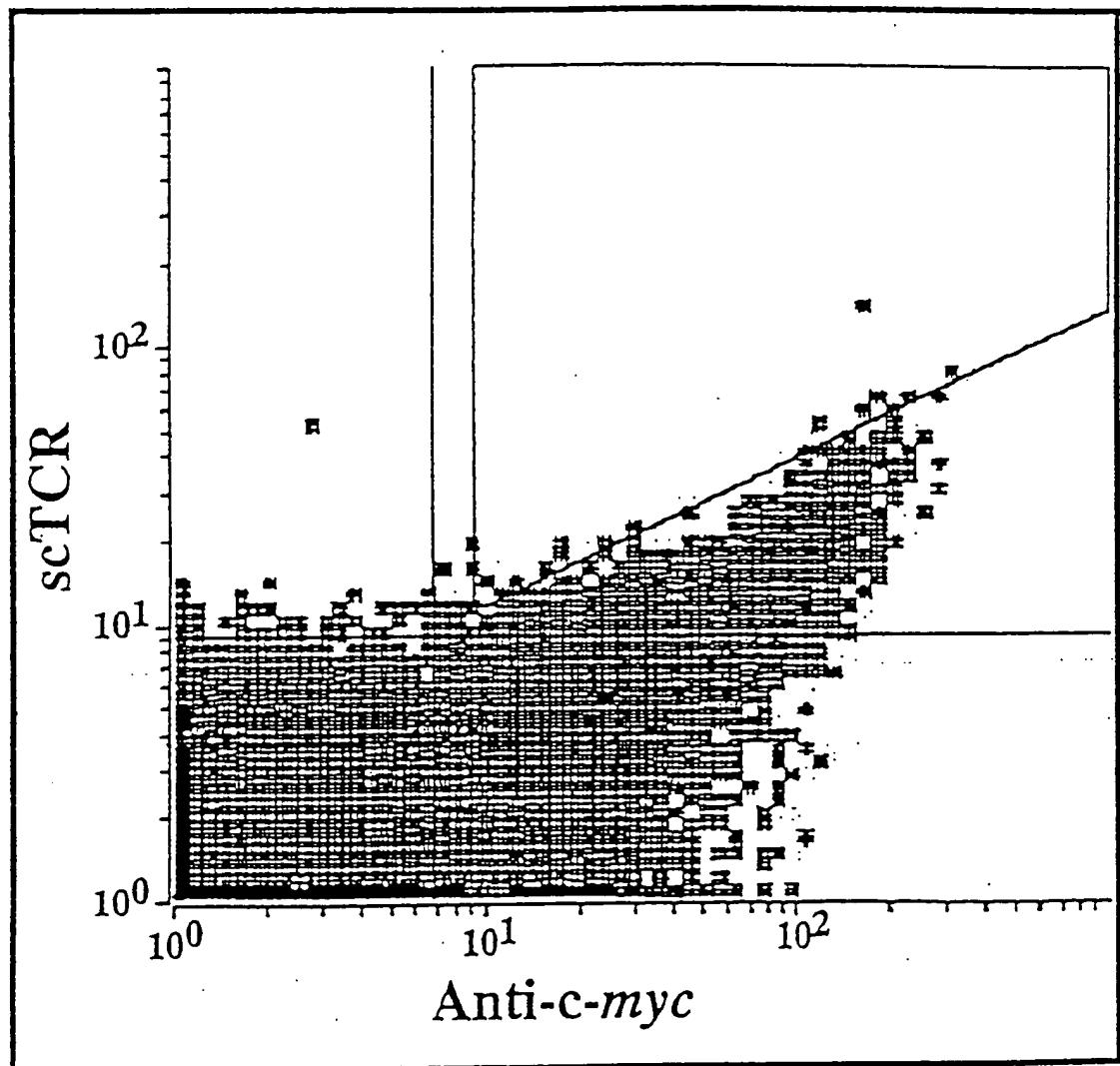


FIG. 14A

Yeast Cell Surface Display of Proteins  
and Uses Thereof

Inventor: Wittrup, et al. Filed: 12/16/03  
USSN Not assigned Atty Docket 97-99E

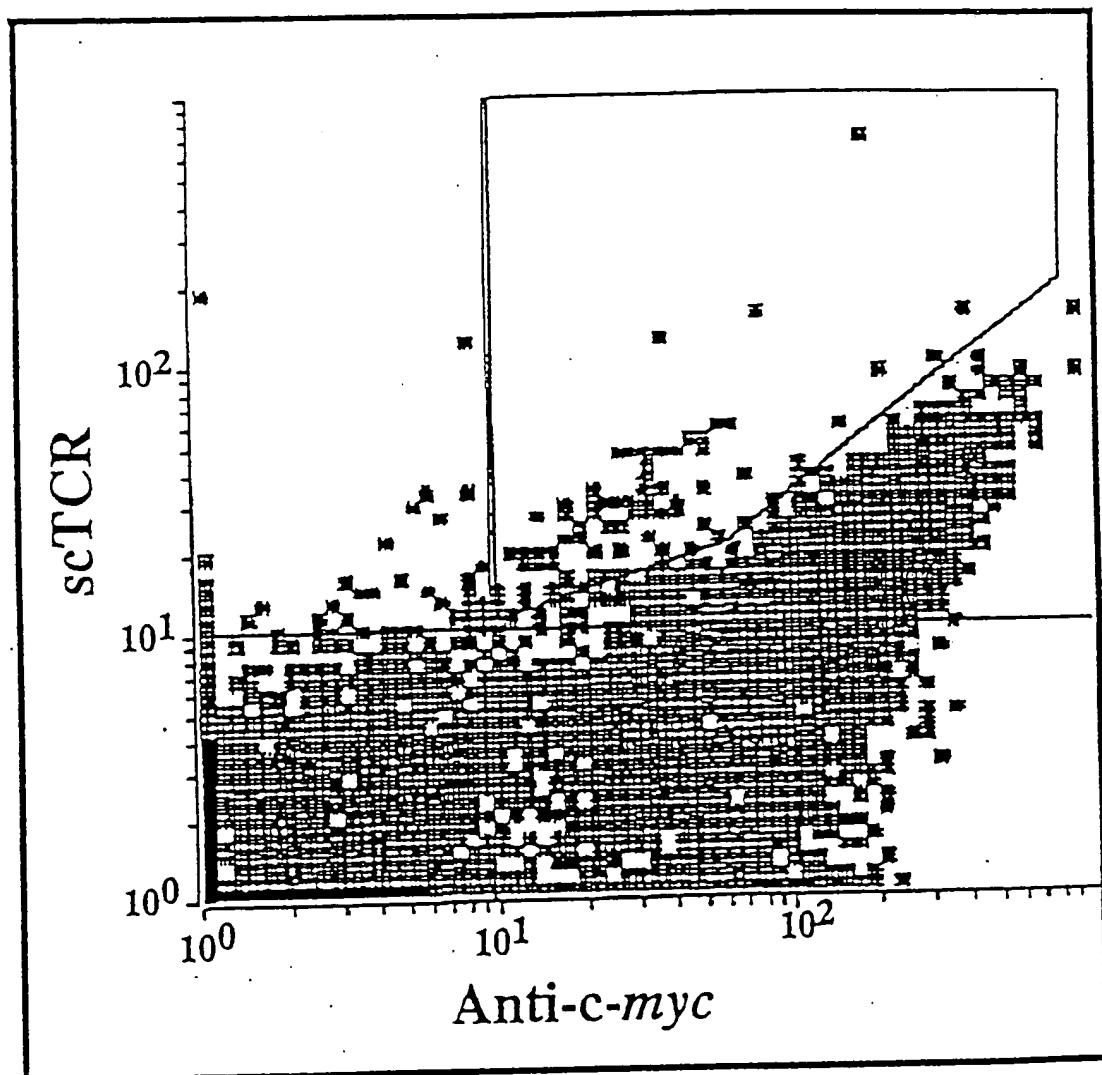


FIG. 14B

Yeast Cell Surface Display of Proteins  
and Uses Thereof

Inventor: Wittrup, et al. Filed: 12/16/03  
USSN Not assigned Atty Docket 97-99E

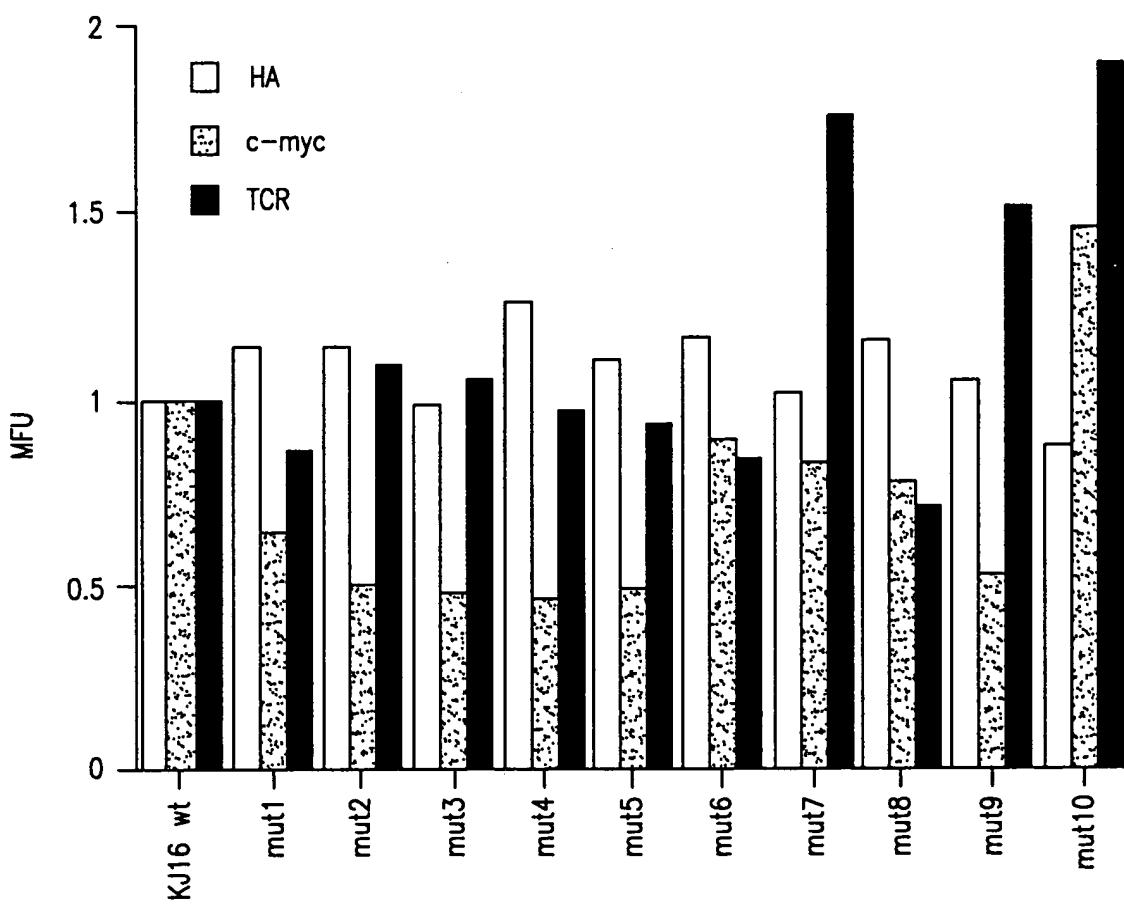


FIG. 15

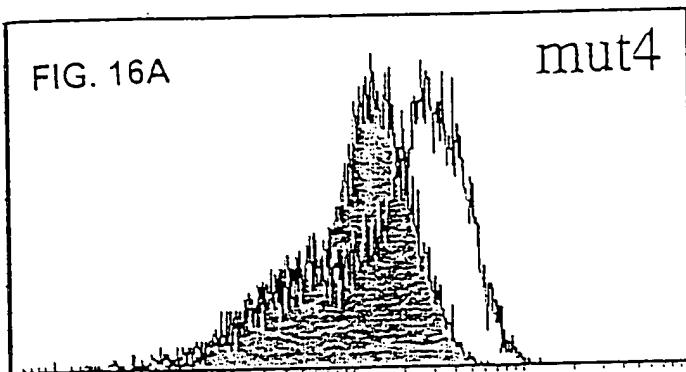
Yeast Cell Surface Display of Proteins  
and Uses Thereof

Inventor: Wittrup, et al. Filed: 12/16/03  
USSN Not assigned Atty Docket 97-99E

Anti-c-myc

FIG. 16A

mut4



scTCR

FIG. 16B

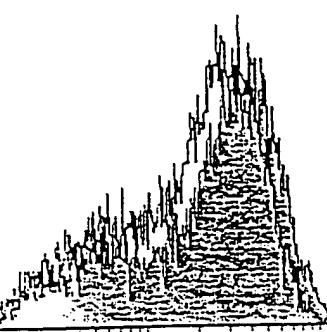


FIG. 16C

mut7

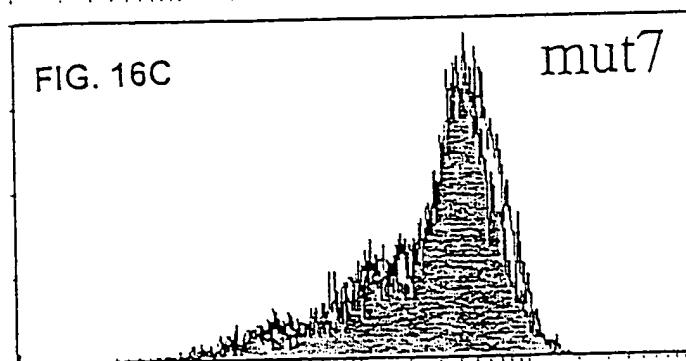


FIG. 16D

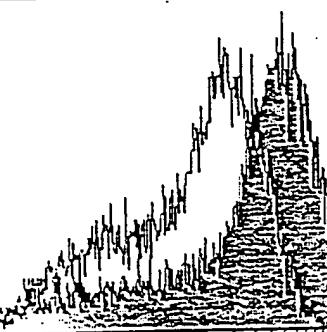


FIG. 16E

mut10

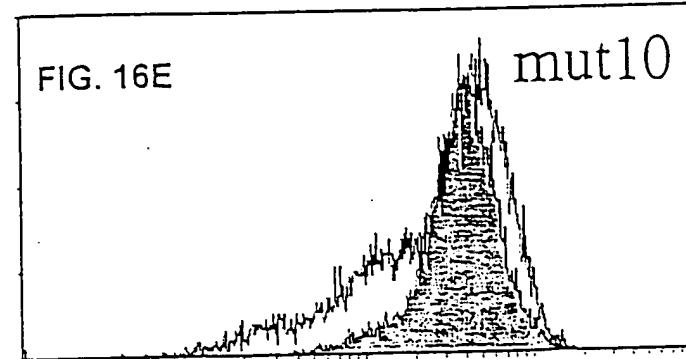
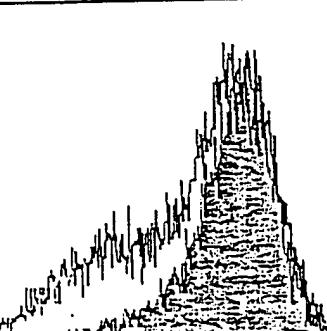


FIG. 16F



Yeast Cell Surface Display of Proteins  
and Uses Thereof

Inventor: Wittrup, et al. Filed: 12/16/03  
USSN Not assigned Atty Docket 97-99E

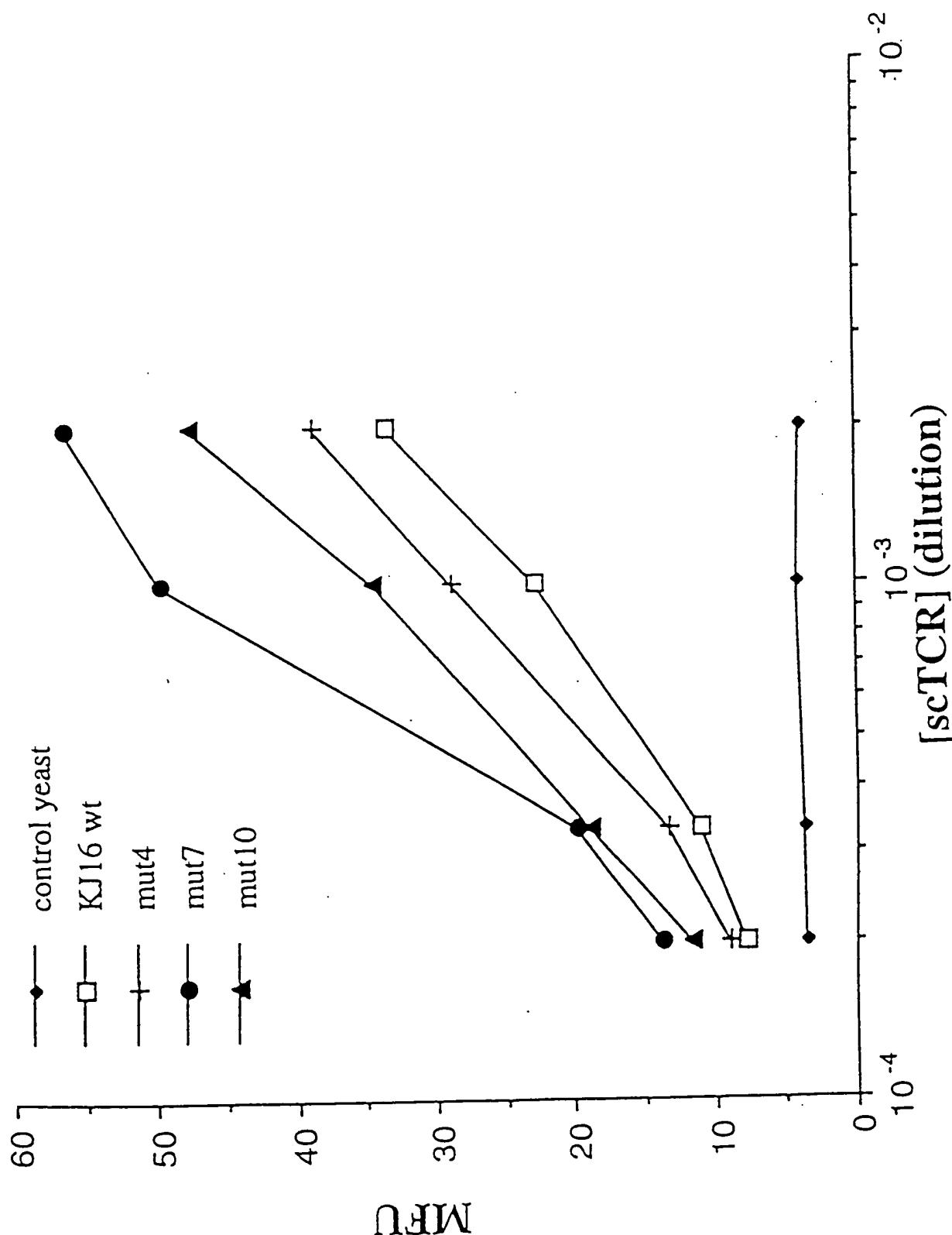


FIG. 17

Yeast Cell Surface Display of Proteins  
and Uses Thereof

Inventor: Wittrup, et al. Filed: 12/16/03  
USSN Not assigned Atty Docket 97-99E

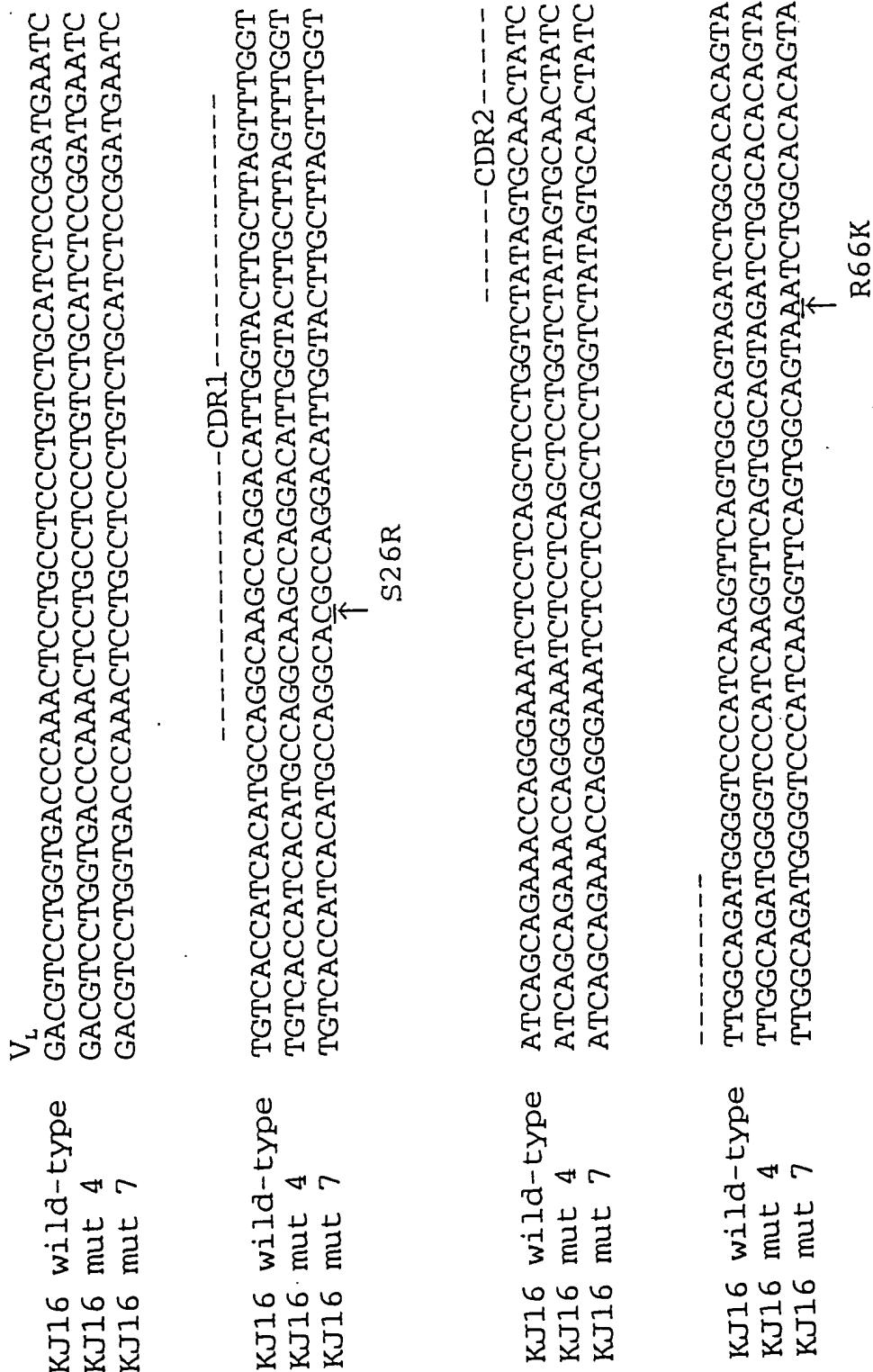


FIG. 18-1

Yeast Cell Surface Display of Proteins  
and Uses Thereof

Inventor: Wittrup, et al. Filed: 12/16/03  
USSN Not assigned Atty Docket 97-99E

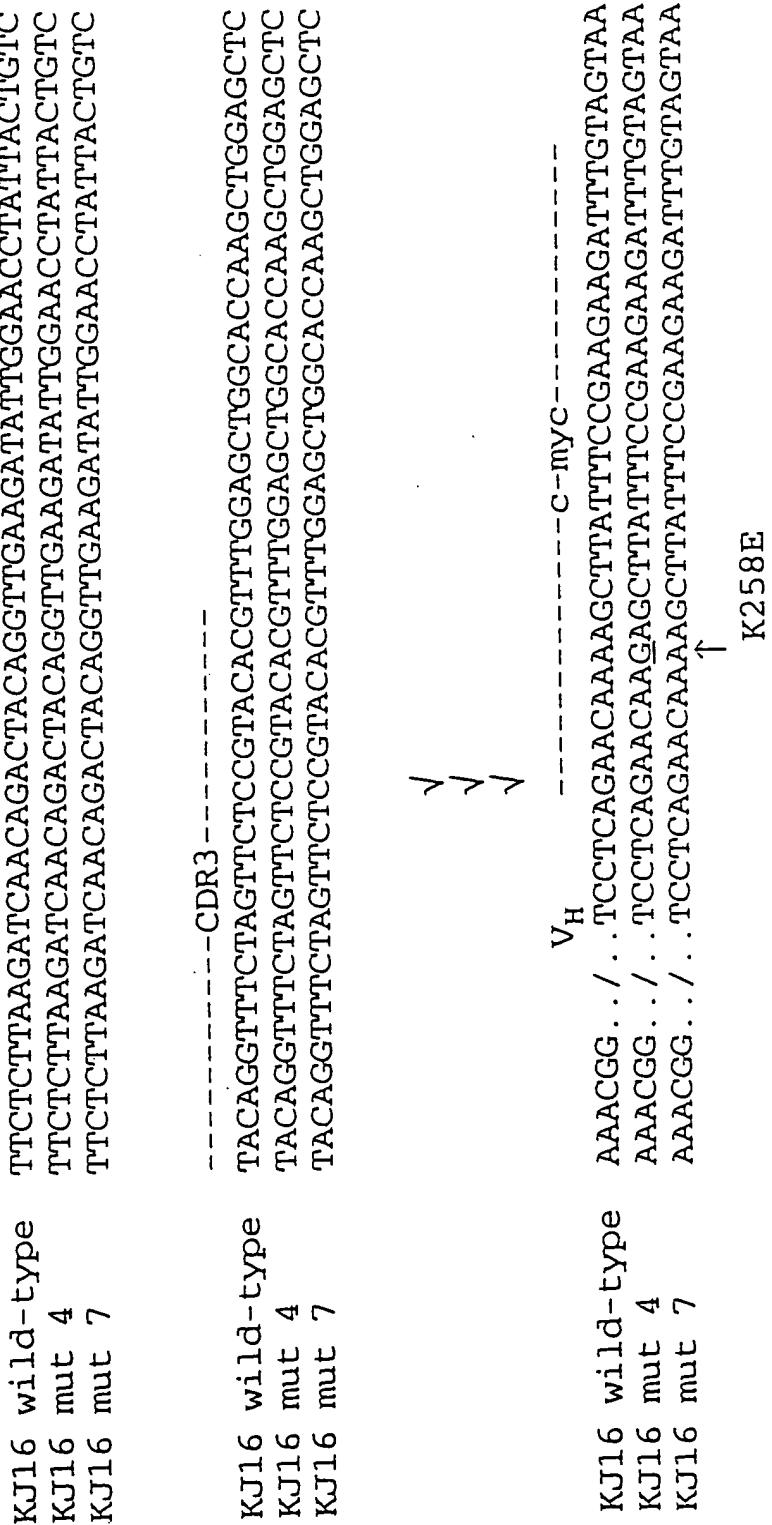


FIG. 18-2

Yeast Cell Surface Display of Proteins  
and Uses Thereof

Inventor: Wittrup, et al. Filed: 12/16/03  
USSN Not assigned Atty Docket 97-99E

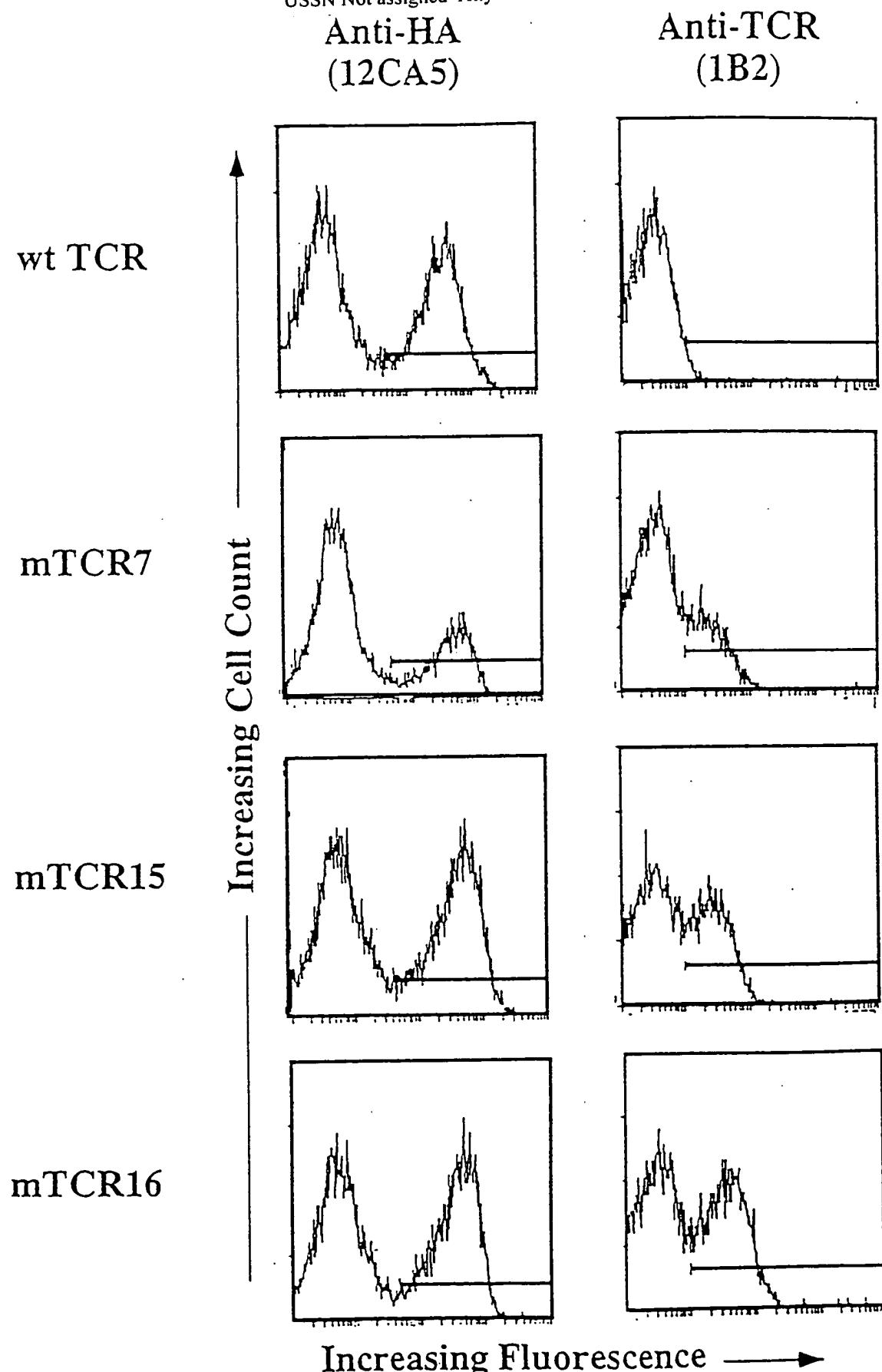


FIG. 19

Yeast Cell Surface Display of Proteins  
and Uses Thereof

Inventor: Wittrup, et al. Filed: 12/16/03  
USSN Not assigned Atty Docket 97-99E

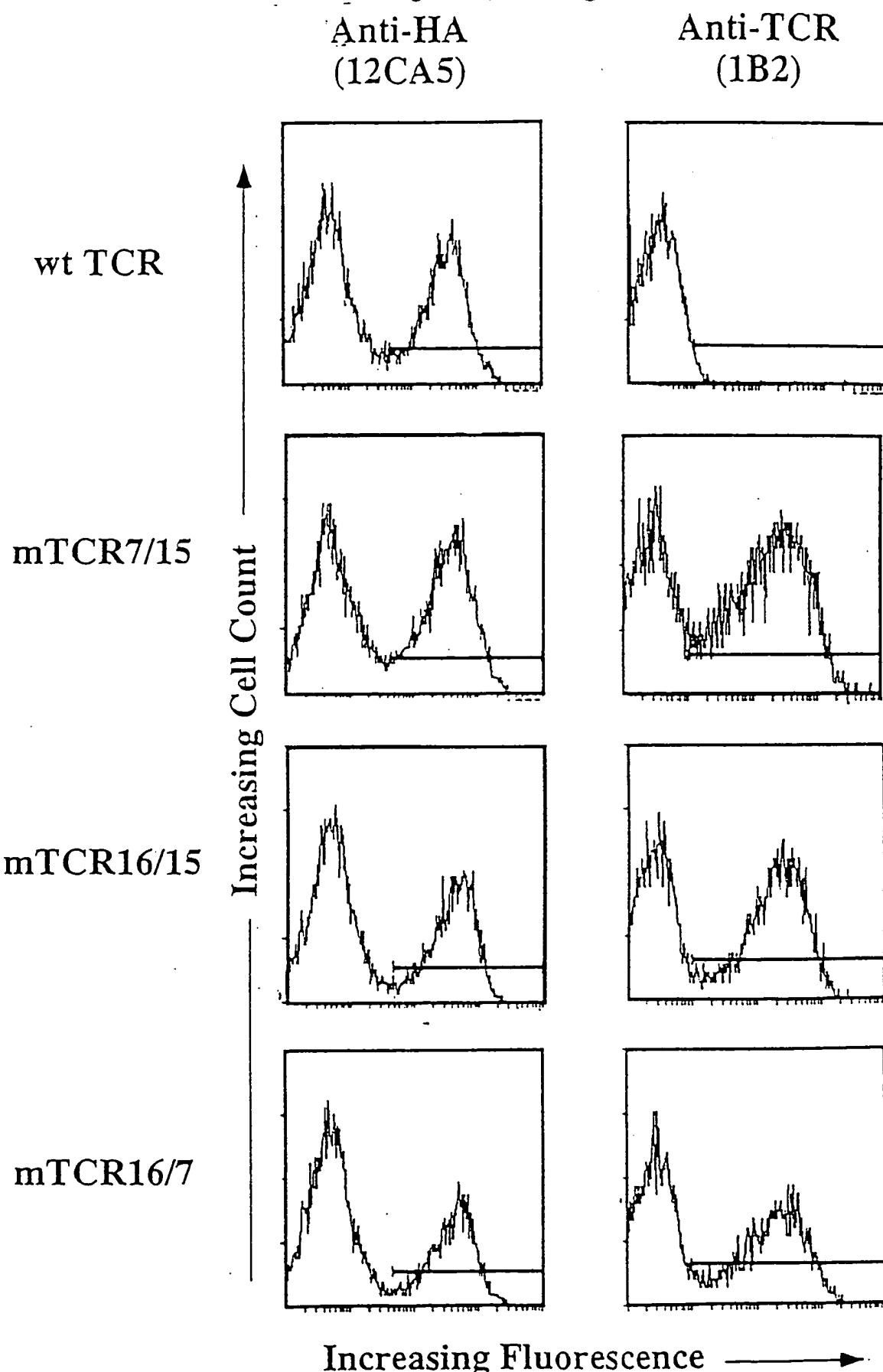


FIG. 20

Yeast Cell Surface Display of Proteins  
and Uses Thereof

Inventor: Wittrup, et al. Filed: 12/16/03  
USSN Not assigned Atty Docket 97-99E

v $\beta$ 8 . 2  
GACGTGGCAG TCACCCAAAG CCCAAGAAC AAGGTGGCAG TAACAGGAGG AAAGGTGACA  
Gly17ΔGlu

-----cdr1-----  
TTGAGCTGTA ATCAGACTAA TAACCACAAAC AACATGTACT GGTATCGGCA GGACACGGGG

-----cdr2-----  
CATGGGCTGA GGCTGATCCA TTATTCTATAT GGTGCTGGCA GCACGTGAGAA AGGAGATATC

-----hv4-----  
CCTGATGGAT ACAAGGCCTC CAGACCAAGC CAAGAGAACT TCTGCCCTCAT TCTGGAGTTC

-----cdr3-----  
GCTACCCCT CTCAGACATC AGTGTACTTC TGTCGCCAGGC GTGGGGGGG CACCTTGTC

linker

TTCGGTGGGG GCACCCGACT ATCGGTGCTAA TCCCTCCGGG ATGATGCTAA GAAGGGATGCT

v $\alpha$ 3 . 1

GCTAAGAAGG ATGATGCTAA GAAAGATGAT GCTAAGAAAG ATGCACAGTC AGTGACACAG

CCCGATGCTC GCGTCACTGT CTCTGAAGGA GCCTCTCTGC AGCTGAGATG CAAGTATTCC

FIG. 21-1

Yeast Cell Surface Display of Proteins  
and Uses Thereof

Inventor: Wittrup, et al. Filed: 12/16/03  
USSN Not assigned Atty Docket 97-99E

-----cdr1-----  
TACTCTGCGA CACCTTATCT GTTCTGGTAT GTCCAGTACC CGCGGCAGGG GCTGGCAGGCTG  
Leu43ΔPro

-----cdr2-----  
CTCCCTCAAGT ACTATTCCGG AGACCCAGTG GTTCAAGGAG TGAATGGCTT TGAGGGCTTGAG

-----hv4-----  
TTCAGCAAGA GCAAATCTTC CTTCACCTG CGGAAAGCCT CCGTGCACTG GAGCGACTCG

-----cdr3-----  
GCTGTGTACT TCTGTGCTGT GAGGGCTTT GCAAAGTGCAC TGACATTTGG ATCTGGCACA  
Leu104ΔPro

AAAGTCAATG TTCTACCATA CATCTAG + 6-His

FIG. 21-2